

Claims

Having thus described our invention, what We claim as new and desire to secure by Letters Patent is:

1. A structure consisting of at least two layers of translucent dielectric containing via holes filled with a conducting material and a pattern of metal electrodes, in which the metal electrode has at least a surface coated with a soldering metal or alloy, which soldering alloy upon alignment of patterns is joined together by heating into a structure joined together, the metal patterns on each layer forming electrodes and at the same time a spacer, which electrodes can be used to produce a display in which the pixels are stacked on top of each other.
2. The structure of claim 1 including a bottom substrate containing TFT's.
3. The structure of claim 2 further including a mirror above said bottom substrate and wherein said at least two layers are transparent and said layers are in the range from 2 to 5.
4. The structure of claim 1 wherein said individual layers carry a pattern upon them and have hollow spaces, which hollow spaces can be filled with an electrophoretic fluid and be suitable to be used as a stacked pixel electrophoretic display.
5. The structure of claim 4 wherein said hollow spaces are filled with liquid crystal material and at least two of said electrodes are made of transparent ITO and thereby form a stacked liquid crystal display.
6. A structure which has connections running vertically through individual translucent dielectric layers using metal filled via holes which permit to make vertical connections through said individual transparent substrates from TFT's on a bottom plate to individual electrodes in one or more color cell levels.

7. The structure of claim 6 wherein said color cell levels are filled with electrophoretic fluid, each color cell level in a pixel having a fluid to provide a different fundamental color.

8. The structure of claim 6 wherein each color cell level can be individually addressed by a respective TFT and wherein said dielectric layers are transparenttt.

9. The structure of claim 7 further including metal walls in each pixel on each color cell level to provide a ground potential and a respective central electrode activated or deactivated by an applied potential from a respective TFT to collect or disperse said electrophoretic fluid.

10. The structure of claim 7 wherein said metal walls surround each pixel and have holes on each side of said pixel to permit forming a meandering path for fluid whereby all pixels can be readily filled with the electrophoretic fluid or a liquid crystal (fluid) without entrapment of air bubbles at times when a vacuum is applied on one side of said structure.

11. The structure of claim 6 wherein said one or more color cells include hollow spaces containing said individual electrodes, said electrodes are overcoated with a layer of dielectric to permit a potential large enough to collect or disperse electrophoretic fluid without discharging particles in said fluid.

12. The structure of claim 11 wherein at least one individual electrode is made of transparent ITO and said fluid is a colored liquid crystal fluid to provide a stacked liquid crystal display.

13. The structure of claim 11 wherein at least one individual electrode is made of transparent ITO and said fluid is a colored liquid crystal fluid to provide a stacked liquid crystal display, said fluid selected to provide a display selected from the group consisting of Guest-Host LCD, Cholesteric LCD, and Holographic Polymer Dispersed LCD.

14. The structure of claim 6 wherein said one or more color cells include hollow spaces containing said individual electrodes, at least one said individual electrode is made of transparent ITO, said hollow space containing colored electroluminescent material to provide an Organic Light Emitting Diode (OLED).

15. A display comprising:

a plurality of color cells stacked one upon another to form a pixel,

a plurality of said pixels positioned adjacent one another in an array for displaying an image,

a plurality of switches corresponding to respective color cells positioned below said color cells for applying a potential over a conductor to an electrode in said respective color cell to activate said color cell in response to said potential,

said conductor passing through and insulated from color cells of a pixel between said switch and said connected electrode in said respective color cell.

16. The display of claim 1 where said switch is directly below said respective pixel and said conductor extends from said switch vertically to said connected electrode.